

CLAIMS

1. A method for manufacturing injection molded articles out of thermoplastic plastics, comprised of:

- g) a step for plasticizing the plastic;
- h) a step for pressing the plasticized plastic into at least one mold,

characterized in that the plastic is plasticized in a continuously running multi-screw extruder with at least three screw shanks that intermesh tightly at least in partial areas and are arranged on a rim line, in particular a ring extruder with at least six screw shanks that intermesh tightly at least in partial areas and are arranged in a rim-like manner.

2. The method according to claim 1, characterized in that the thermoplastic is a polycondensate, in particular a polyester.
3. The method according to one of the preceding claims, characterized in that the polycondensate is dried prior to plasticization.
4. The method according to one of the preceding claims, characterized in that the quantity of plasticized plastic exceeds 800 kg/h, in particular exceeds 1000 kg/h.
5. The method according to one of the preceding claims, characterized in that the plasticized plastic is subjected to one or more of the following steps, which involve

- a) degassing,
 - b) mixing with additives,
 - c) filtration,
 - d) increasing the pressure using a melt pump,
 - e) determining the rheological properties,
 - f) buffering in at least one buffer container,
so that plasticization can take place
continuously, and pressing in a mold can take
place discontinuously.
6. The method according to one of the preceding
claims, characterized in that the plasticized
plastic is alternately relayed by an on-off valve
relay to one of at least two buffer containers,
and either
- a) pressed into an injection molding tool
allocated to the respective buffer container,
or
 - b) pressed into a single injection-molding tool
via another on-off valve.
7. The method according to one of the preceding
claims, characterized in that the average
retention time of the plasticized plastic in the
process must not exceed 60 seconds plus the cycle
time, in particular must not exceed 30 seconds
plus the cycle time, and/or the average retention
time of the plasticized plastic in the processing
section of the plasticization extruder must not
exceed 15 seconds, in particular must not exceed
10 seconds.
8. The method according to one of the preceding
claims, characterized in that a plurality of
hollow items, in particular parisons for food
packaging, such as beverage bottles, is

manufactured out of a thermoplastic, e.g., polyester, by pressing the plasticized plastic into a plurality of cavities of an injection molding tool.

9. A system for manufacturing injection molded articles out of thermoplastic plastics, which has at least one plasticization extruder (11; 31) and at least one injection molding tool (21; 44, 46), characterized in that the plasticization extruder involves a continuously operating multi-screw extruder with at least three screw shanks (16_{n1} - 16_{nx} ; 36_{n1} - 36_{nx}) that tightly intermesh at least in partial areas and are arranged on a rim line.
10. The system according to claim 9, characterized in that the plasticization extruder (11; 31) has a throughput Z exceeding 800, in particular exceeding 2750, wherein

$Z = Q/L^{2.8}$, wherein Q is calculated in [kg/h] and L in [m].

11. The system according to one of claims 9 to 10, characterized in that the multi-screw extruder (11; 31) involves a ring extruder with fully enclosed screw shanks arranged in a rim-like manner.
12. The system according to one of claims 9 to 11, characterized in that the plasticization extruder (11; 31) has at least one drive (12), a reduction gear (13), a power divider (14) and a processing section (15), wherein the processing section exhibits one or more of the following components:
 - a) one or more material inlets,

- b) one or more metering devices connected with a material inlet,
- c) one or more outlets,
- d) one or more vacuum stations connected with an outlet,

and that a melting path is allocated to at least one injection molding tool (21; 44, 46), wherein the melting path can have one or more of the following components:

- e) a melt pump,
- f) one or more measuring devices for ascertaining rheological data,
- g) one or more melt filters,
- h) one or more buffer containers,
- i) one or more on-off valves.

13. The system according to one of claims 9 to 12, characterized in that the melting path has at least one on-off valve (39_{n1}) and at least two buffer containers (40, 42), wherein the on-off valve establishes a respective connection between the plasticization extruder (31) and a buffer container (40, 42), and

- a) a respective buffer container is either connected with an allocated injection molding tool (44, 46), or
- b) the at least two buffer containers are connected with a single injection molding tool by way of an additional on-off valve.

14. The system according to one of claims 9 to 13, characterized in that the screw shanks (16_{n1}-16_{nx}; 36_{n1}-36_{nx}) can be axially shifted, giving rise to a

buffer area in the processing section during an axial shift toward the back, wherein

- a) the screw shanks can be axially shifted relative to the power divider (14),
 - b) the screw shanks can be axially shifted together with the power divider (14) relative to the reduction gear (13),
 - c) the screw shanks can be axially shifted together with the power divider (14) and the reduction gear (13) relative to the drive (12),
 - d) the screw shanks can be axially shifted together with the power divider (14), reduction gear (13) and drive (12)
 - e) the processing section casing can be axially shifted relative to the screw shanks, or
 - f) the core inside the screw shank rim of a ring extruder can be axially shifted relative to the screw shanks.
15. The system according to one of claims 9 to 14, characterized in that the injection molding tool (21; 44, 46) exhibits several cavities (22_{n1} - 22_{nx} ; 45_{n1} - 45_{nx} , 47_{n1} - 47_{nx}) for manufacturing parisons for food packaging, in particular beverage bottles,